M/021/0008
TASK 3063
CC: TOM
0008

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July 7, 2009

Mr. Rob Herbert, Section Manager
DWQ Ground Protection Section
P.O. Box 144870
Salt Lake City, Utah 84114-4870

RECEIVED
JUL 09 2009
DIV. OF OIL, GAS & MINING

Mr. Paul Baker, Environmental Manager
DOGM Minerals Reclamation Program
1594 North Temple, Suite 1210
Salt Lake City, UT 84114-5801

RE: Palladon Iron Mine's Use of Pit Water for Dust Suppression within the Mining Operation Area

Dear Rob and Paul,

Palladon Iron Mine (PIM), located on the east side of Iron Mountain about 18 road miles west of Cedar City, Utah, is completing a Storm Water Pollution Prevention Plan for its Utah Pollution Discharge Elimination System (UPDES) Notice of Intent (NOI). According to the UPDES Storm Water program for Sector G (metal mines and ore dressing facilities), pit water cannot be used for dust control purposes. Palladon is requesting that the DWQ issue an exception to this prohibition because of the benign nature of the pit water at PIM, the arid climate at the mine location, local geology, pit water quality, and the limited quantities of pit water to be used for this purpose.

Background

Modern commercial iron mining in the Iron Mountain area began about 1923. A series of owners mined here; Palladon Iron Corporation (Palladon), the current operator, purchased the mine from Geneva Steel in the early 2000's. Currently, the Comstock/Mountain Lion (CML) Pit is the only area Palladon has active plans to develop.

As with any industrial site, rainfall and melting snow at the facility can generate storm water runoff that has the potential to contact various materials and equipment at the PIM. While storm water runoff is minimal due to the arid conditions at the mine, Palladon has active storm water controls.

To prevent contamination to storm water that is infrequently intercepted by the site, the ore handling area and all overburden and soil piles are individually bermed: any water falling on

these locations is collected within the bermed area where it stays until it evaporates or infiltrates into the ground. Water falling outside the bermed areas does not contact the materials within the bermed areas. The pit is incised and is thus self-contained. Access roads feed either into the pit or into the bermed ore handling area, and are thus also self contained. Therefore, this facility has zero discharge of storm water or snowmelt from the facility to off-site drainageways or water bodies.

The PIM is located near the head of ephemeral draws that drain northward about seven miles before intersecting the intermittent Big Hollow Wash at about 5,450 feet above MSL. The mine location in relation to these drainages is shown on **Figure 1.** This wash flows into the intermittent Iron Springs Creek another two miles to the north. This wash ends in a playa approximately 11 miles further north. The nearest perennial surface water body is Quichapa Lake, a closed-basin lake located approximately 10 miles east-northeast of the project site at 5,450 feet above MSL. It is not in the same drainage area as PIM. No other perennial rivers or water bodies are near the area. The elevation of the mine is approximately 6,370 feet above MSL, well above any floodplain.

Geologic Setting and Surface Vegetation

Iron Mountain is a pluton of quartz monzonite porphyry. Overlying this are Jurassic and Cretaceous sedimentary rocks that are faulted and folded. The Homestake Limestone Member of the Carmel Formation and the Navajo sandstone are represented here. A thrust fault on the eastern side of Iron Mountain, where the mine is located, is a reverse fault that formed as magma was emplaced. The ore is a hematite/magnetite located along the contact between the Homestake Limestone and the quartz monzonite intrusive.

Surficial deposits cover most of the valley up to the elevation of the mine and include partly consolidated, very thick, upper Tertiary and lower Quaternary clastic alluvial sediments in outwash plains and valley fills.

Vegetation is moderately sparse and is dominated by Pinyon-Juniper forests above the mine area and sagebrush at the base of the mine, grading to salt desert shrub communities below the mine and in the valley bottom.

Pit Water Quality and Use at the Mine

Pit water analysis from 2006 indicates that the pit water has a pH of about 8 and is of good quality (see **Appendix A** for complete results). **Table 1** shows results for all parameters that were above detection (14 out of 32) in the pit lake drinking water analysis. Ore, overburden, and topsoil test results for the presence of acid generating materials indicate that the rock, ore, and soil are neutral to alkaline in nature (see **Appendix A**). These results indicate that no hazardous or deleterious materials would be released if pit water were applied to haul roads in limited quantities.

Table 1. Pit Water Chemical Analysis as Drinking Water

Parameter	Sample Result	Units	MRL
Receiving pH	8.16	SU	0
Receiving Temp	20	C	0
Barium	74.6	µg/L	50
Magnesium	64.7	Mg/L	2.5
Alkalinity	182	Mg/L	1
Bicarbonates	222	Mg/L	5
Hardness B	398	Mg/L	1
Potassium	4.37	Mg/L	2.5
Sodium	33.5	Mg/L	5
Sulfate	133	Mg/L	5
Total Phosphate	0.02	Mg/L	0.01
Conductivity	1000	µS/cm	0
TDS	535	Mg/L	20
Turbidity	1.46	NTU	0.1

The mining contractor at Palladon Mine (Gilbert Development, Inc.) provided the following estimates of the volume of water used for dust suppression:

Volume of water used per day:
80,000 to 100,000 gal (summer)
16,000 gal (winter)

Number of days per week water is applied:
4 to 5 days (summer)
1 to 2 days (winter)

Total Volume Used per week:
320,000 to 500,000 gal (summer)
16,000 to 32,000 gal (winter)

Total Volume Used per year (assumes 35 weeks of summer and 17 weeks of winter application rates):
Low – 11,472,000 gallons per year
High – 18,044,000 gallons per year

Volume of water in an acre/foot = 325,900 gallons

Pit water is used only for road dust suppression within the mine itself, which is fully contained. It is not used for dust suppression outside of the mine. It is used in sufficient quantities to hold

the dust down, but in small enough quantities that there is no free water running off roads and roads do not become muddy.

There are approximately 21,200 linear feet of road and 16 acres of staging and ore handling areas which are watered for dust control. Roads average 75 feet in width, resulting in a surface area of approximately 36.5 acres or 1,590,000 ft^2. The total area onto which pit water is applied is approximately 52.5 acres or 2,286,900 ft^2. Based on the assumption of 35 weeks of summer watering rates and 17 weeks of winter water rates, the resulting water application rate is approximately 5 to 7.9 gallons/ft^2/year.

Pit water is not used to spray on ore crushers, conveyors, or stockpiles. The ore is quite heavy and has an ambient moisture content of about five percent: very little dust is produced during ore crushing activities.

Springs, Wells, and Groundwater Resources

Groundwater is found in the Jurassic rock along the iron ore contacts, primarily in fracture planes and along bedding planes. Groundwater also occurs in valley fills under both confined (artesian) and unconfined conditions.

Three springs have been identified near the PIM: Raddatz Spring is in Section 24, T36S, R14W; Oak Spring in Section 31, T36S, R14W; and Crystal Spring is in Section 36, T36S, R14W. None are used for culinary purposes, but they are used to water livestock.

The CML pit experiences seepage along some fractures and formation contacts, and currently holds water. This water is approximately 80 feet below the top of the eastern pit wall, which is the low side of the pit.

Existing test hole data from the 1950s and 1960s found groundwater approximately 80 to 100 feet below ground surface (bgs) at the ore handling area, 120 feet bgs at the rail loadout, and 290 feet bgs at the lean ore stockpile located west (uphill) of the ore handling area.

Summary

The PIM requests the DWQ issue an exception to the prohibition of the use of pit water to control dust. The amount of water used is small considering that the water is applied to a large are area over the course of an entire year. Pit water quality, soil, ore, and overburden data do not indicate that deleterious substances would be released or created due to pit water use. Geology indicates that the substrate, though faulted, is stable and non-reactive. Information about springs and test holes indicates that ground water resources are at an adequate depth to preclude mixing of the benign pit water with surrounding ground waters.

Please review the enclosed pit water quality, overburden, ore, and soil data. If you agree that the controlled use of pit water for dust suppression is a viable option that will not cause environmental harm, please respond in writing. If you have further questions or stipulations,

please feel free to call or email me so we can develop a plan that you are comfortable with. My contact information is written below my signature.

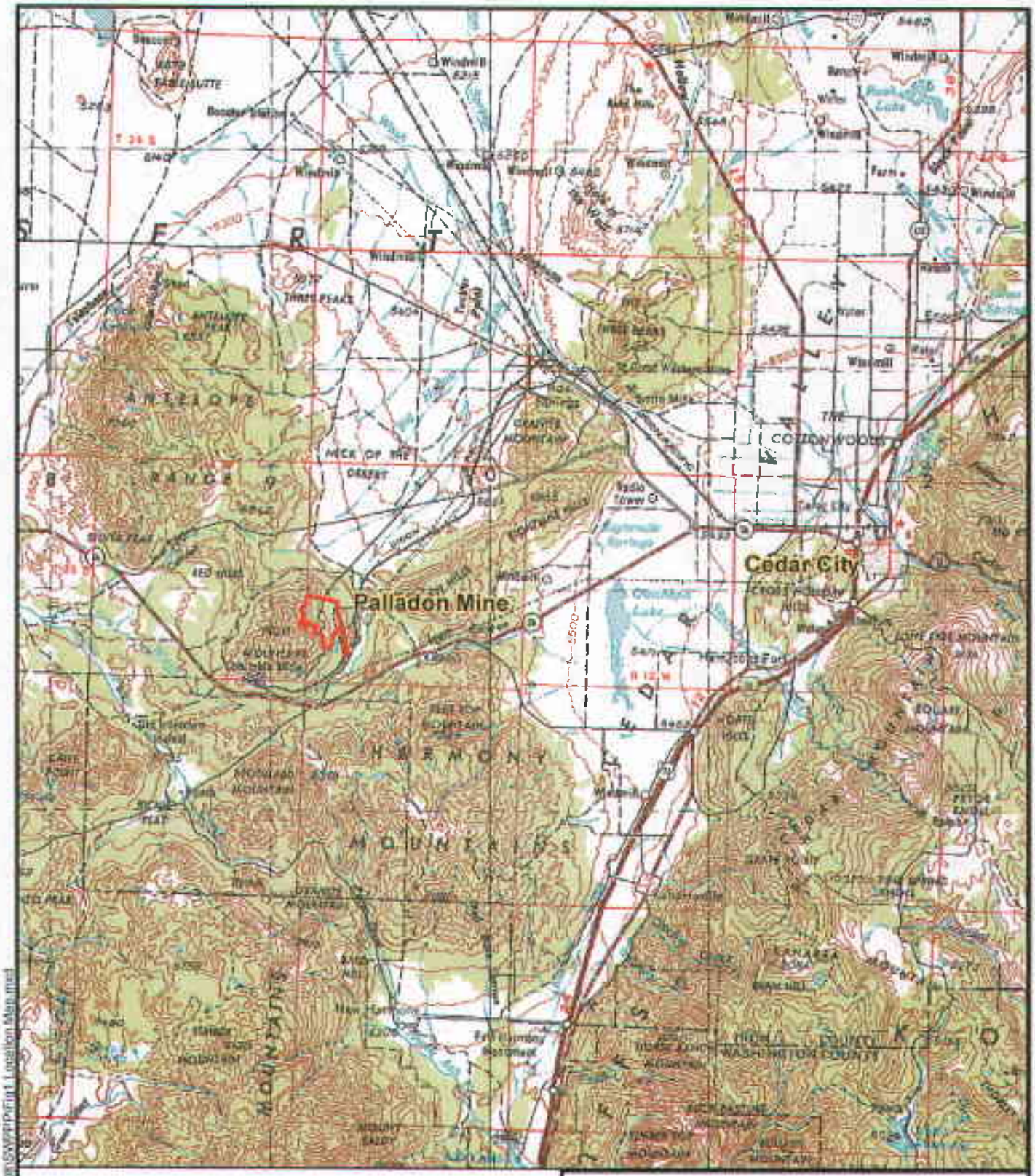
Thank you for your time and consideration in this matter.

Sincerely,

Ms. Marit Sawyer
JBR Environmental Consultants
801-943-4144
msawyer@jbrenv.com

encl: Appendix A
Area Map of Mine Site

xc: Aly Pedersen, Darrel Twede – Palladon Iron Mine – w/encl
Linda Matthews, Jon Schulman, Karla Knoop – JBR Environmental Consultants



PALLADON IRON

PALLADON MINE SWPPP

FIGURE 1
LOCATION MAP

jbr			05/14/09
CP	CP	1:250,000	

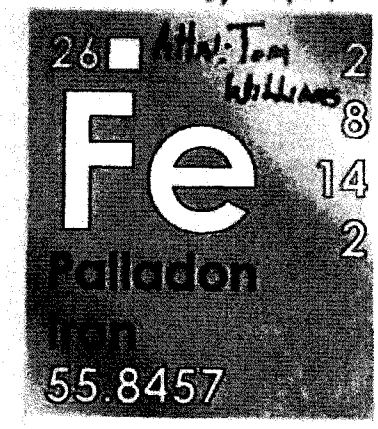
drawings\Palladon Iron Permitting 2009\SWPPP\Fig1 Location Map.mxd

Appendix A

Water, Soil, Overburden, and Ore test results

3/27/07

Geller Fax (303) 985-2080



Greg G. Hawkins
Director Of Operations
554 South 300 East, Ste. 250
Salt Lake City, UT 84111
Office: 801.521.5252
Fax: 801.521.5454
Mobile: 801.860.8097
ghawkins@palladoniron.com

Mine Water Quality
Report of Analysis

Name: Palladon Iron
554 S. 300 E. Suite 250
Salt Lake City, UT 84111
Sample Date: 6/20/2006 1:45:00 PM
Receipt Date: 6/20/2006 3:15:00 PM
Report Date: 7/31/2006
Sample Site: Mtn Lion #3 Pit Lake

Sample ID#: K2006 01994
Sample Type: Drinking Water
Sampler: GREG HAWKINS GH

Parameter	Sample Result	Units	MRL	Method	Analysis Date	Analysis Time	Analyst
Receiving							
Receiving pH	8.16	SU	0	4500 H	6/20/2006	3:15:00 PM	JD
Receiving Temperature	20	C	0	2550	6/20/2006	3:15:00 PM	JD
Chemical							
Cyanide	<0.10	mg/L	0.05	4500-CN-C	6/26/2006	9:15:00 AM	KW
Metals							
Antimony	<5.0	ug/L	5	204.2	7/5/2006	2:44:00 PM	JD
Arsenic	<10	ug/L	10	206.2	6/23/2006	7:36:00 PM	JD
Barium	74.6	ug/L	50	208.2	7/7/2006	1:52:00 PM	JD
Beryllium	<0.0005	mg/L	0.0005	200.8	7/12/2006	8:49:00 AM	CTF
Cadmium	<1.0	ug/L	1	213.2	7/8/2006	7:40:00 PM	JD
Calcium	52.8	mg/L	2.5	215.1	7/13/2006	6:26:00 AM	JD
Chromium	<25	ug/L	25	218.2	7/7/2006	9:38:00 AM	JD
Copper	<50	ug/L	50	220.2	6/23/2006	4:25:00 PM	JD
Iron	<0.02	mg/L	0.02	200.7	7/12/2006	1:54:00 PM	CTF
Lead	<5	ug/L	5	239.2	6/27/2006	2:42:00 PM	JD
Magnesium	64.7	mg/L	2.5	242.1	7/11/2006	11:08:00 AM	JD
Mercury	<0.0002	mg/L	0.0002	200.8	7/12/2006	8:49:00 AM	CTF
Nickel	<10	ug/L	5	249.2	7/8/2006	10:39:00 AM	JD
Selenium	<5.0	ug/L	5	270.2	7/13/2006	9:23:00 AM	JD
Thallium	<2.0	ug/L	2	279.2	7/5/2006	8:10:00 AM	JD
Minerals							
Alkalinity	182	mg/L	1	2320 B	6/21/2006	9:15:00 AM	JC
Bicarbonates	222	mg/L	5	2320 B	6/21/2006	9:15:00 AM	JC
Carbonate	<1	mg/L	1	2320 B	6/21/2006	9:15:00 AM	JC
Fluoride	<0.400	mg/L	0.5	4500 F C	6/27/2006	3:30:00 PM	KW
HardnessB	398	mg/L	1	2340 B	7/31/2006	9:16:00 AM	JD
Potassium	4.37	mg/L	2.5	258.1	7/13/2006	6:51:00 AM	JD
Sodium	33.5 *	mg/L	5	273.1	7/10/2006	4:12:00 PM	JD

Report of Analysis

Name: Palladon Iron
554 S. 300 E. Suite 250
Salt Lake City, UT 84111
Sample Date: 6/20/2006 1:45:00 PM
Receipt Date: 6/20/2006 3:15:00 PM
Report Date: 7/31/2006
Sample Site: Mtn Lion #3 Pit Lake

Sample ID#: K2006 01994
Sample Type: Drinking Water
Sampler: GREG HAWKINS

Parameter	Sample Result	Units	MRL	Method	Analysis Date	Analysis Time	Analyst
Minerals							
Sulfate	133	mg/L	5	375.4	7/8/2006	10:45:00 AM	JC
Nutrient							
Nitrate	<0.1	mg/L	0.1	353.3	7/13/2006	9:00:00 AM	JC
Nitrite	<0.1	mg/L	0.1	353.3	6/21/2006	6:00:00 AM	JC
Total Phosphate	0.02	mg/L	0.01	4500-P-E	7/14/2006	1:30:00 PM	CTF
Physical							
Conductivity	1000	uS/cm	0	2510 B	6/20/2006	4:35:00 PM	JD
Total Dissolved Solids	535	mg/L	20	2540 C	6/22/2006	11:00:00 AM	JD
Turbidity	1.46	NTU	0.1	180.1	6/20/2006	4:37:00 PM	JD

Report Approved By _____
Ty Redd, Laboratory Director

CHEMTECH

ANALYTICAL LABORATORY

6100 S. STRATLER
MURRAY, UTAH 84107
PHONE: (801) 262-7299
FAX: (801) 262-7378

DATE: 9-18-91

TO: Geneva Steel of Utah
P.O. Box 2500
Provo, Ut 84603

SAMPLE ID: Lab #U067448 - Anthill Soil, 8-05-91

CERTIFICATE OF ANALYSIS

PARAMETER	DETECTED
pH Units	8.22
CEC, meq/100gram	28.0
Chloride as Cl, mg/Kg	20
Organic Matter, %	1.1
Nitrate as NO_3-N, mg/Kg	3.10
Phosphate as PO_4-P, mg/Kg	948
Potassium as K, mg/Kg	900
Calcium as Ca, mg/Kg	20,300
Magnesium as Mg, mg/Kg	4,560
Zinc as Zn, mg/Kg	25.0
Copper as Cu, mg/Kg	14.6
Sulfate as SO_4, mg/Kg	107
Sodium as Na, mg/Kg	172
Iron as Fe, %	4.11
Conductivity, 1:1, umhos/cm	231
Saturation, %	32.8
Sieve:	
Size: 40 - % Retained	52.7
60 - % Retained	19.9
100 - % Retained	13.8
200 - % Retained	5.4
200 - % Passed	8.2

Rex Henderson

CHEMTECH

ANALYTICAL LABORATORY

6100 S. STRATLER
MURRAY, UTAH 84107
PHONE: (801) 262-7299
FAX: (801) 262-7378

DATE: 9-18-91

TO: Geneva Steel of Utah
P.O. Box 2500
Provo, Ut 84603

SAMPLE ID: Lab #U067447 - Comstock So. Soil, 8-05-91

CERTIFICATE OF ANALYSIS

PARAMETER	DETECTED
pH Units	7.39
CEC, meq/100gram	42.9
Chloride as Cl, mg/Kg	36
Organic Matter, %	2.6
Nitrate as NO_3-N, mg/Kg	1.19
Phosphate as PO_4-P, mg/Kg	688
Potassium as K, mg/Kg	3,080
Calcium as Ca, mg/Kg	4,000
Magnesium as Mg, mg/Kg	6,600
Zinc as Zn, mg/Kg	52.6
Copper as Cu, mg/Kg	19.5
Sulfate as SO_4, mg/Kg	214
Sodium as Na, mg/Kg	189
Iron as Fe, %	3.18
Conductivity, 1:1, umhos/cm	208
Saturation, %	45.2
Sieve:	
Size: 40 - % Retained	50.7
60 - % Retained	12.4
100 - % Retained	15.2
200 - % Retained	9.6
200 - % Passed	12.1

Rex Henderson

CHEMTECH

ANALYTICAL LABORATORY

6100 S. STRATLER
MURRAY, UTAH 84107
PHONE: (801) 262-7299
FAX: (801) 262-7378

DATE: 9-18-91

TO: Geneva Steel of Utah
P.O. Box 2500
Provo, Ut 84603

SAMPLE ID: Lab #U067445 - Mt. Lion No. Soil, 8-05-91

CERTIFICATE OF ANALYSIS

PARAMETER	DETECTED
pH Units	7.19
CEC, meq/100gram	18.9
Chloride as Cl, mg/Kg	26
Organic Matter, %	1.7
Nitrate as NO_3-N, mg/Kg	0.58
Phosphate as PO_4-P, mg/Kg	905
Potassium as K, mg/Kg	2,040
Calcium as Ca, mg/Kg	1,610
Magnesium as Mg, mg/Kg	4,300
Zinc as Zn, mg/Kg	27.3
Copper as Cu, mg/Kg	14.5
Sulfate as SO_4, mg/Kg	<20
Sodium as Na, mg/Kg	117
Iron as Fe, %	2.11
Conductivity, 1:1, umhos/cm	104
Saturation, %	27.3
Sieve:	
Size: 40 - % Retained	49.3
60 - % Retained	13.8
100 - % Retained	12.2
200 - % Retained	6.8
200 - % Passed	17.9

Rex Henderson

CHEMTECH

ANALYTICAL LABORATORY

6100 S. STRATLER
MURRAY, UTAH 84107
PHONE: (801) 262-7299
FAX: (801) 262-7378

DATE: 10-28-91

TO: Geneva Steel of Utah
P.O. Box 2500
Provo, Utah 84603

DATE SUBMITTED: 9-30-91

CERTIFICATE OF ANALYSIS

SAMPLE ID:	Comstock Waste Dump	Comstock Lean Ore Dump	Iron Mountain Wet Plant Waste
LAB #:	U069120	U069121	U069122
PARAMETER			
Maximum Acid Potential, Tons $CaCO_3$/1000 Tons	<.1	<.1	<.1
Neutralization Potential, Tons $CaCO_3$/1000 Tons	7.2	25.5	11.4

COPY:
JERRY GROVER

Rex Henderson